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# **Keynes, Keynesians and Contemporary Monetary Theory and Policy: An Assessment**

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**Abstract:**

There has been no Keynesian Revolution in economic theory but there has been an unacknowledged Keynes's Revolution in economic policy. Keynes's theoretical revolution rested on the adoption of monetary analysis and the application of the principle of effective demand to demonstrate the existence of multiple long-period equilibria. Keynes's policies –creating a role for 'Big Government' and the 'Big Bank'- follow from his theory and have changed the structure of the *laissez faire* economy. Many Keynesians fail to acknowledge either of these issues and continue the classical tradition of real analysis and the assumption of unique long-period equilibrium. Real analysis, as a special case of Keynes's monetary analysis, provides a distorted perspective of the responsibilities of monetary policy which largely accounts for the increasing fragility and volatility exhibited by financial markets over the past two decades.

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**Introduction**

To many, the relationship between Keynes and Keynesian economics is an enigma. On the one hand, Keynes claimed that the *General Theory* would revolutionise the way economists thought about the aggregate economy. On the other hand, in an early review, Knight (1937) urged readers to disregard the claims to revolution and treat the *General Theory* as just another contribution to the theory of the trade cycle. Many Keynesians, old and new, have taken Knight's advice. Consequently, Laidler (1999) makes a strong case that the Keynesian Revolution was a fabrication. Laidler argues, from a classical perspective, that what passes for Keynesian economics does not involve a theoretical revolution at all but rather a repackaging and recasting of classical theoretical ideas and policies. The most obvious illustration of Laidler's thesis is the reliance by Keynesian economics on the stickiness of prices and wages to explain unemployment – the very explanation that Keynes (1936, p. 257) attributes to the classical economists in the *General Theory*! More recently Tily (2007) argues that Keynesian economics represents a betrayal of Keynes, echoing a long standing view

held by Cambridge supporters of Keynes, such as Joan Robinson, Richard Kahn and Paul Davidson (1972, 2002, 2007). Thus when examined from either a classical or a Keynes perspective there appears to be *no theoretical revolution* in much of contemporary Keynesian economics. That conclusion is supported by a reading of Skidelsky (2003).

Despite the rejection of Keynes's theory, Keynes also made two crucial policy proposals that follow from his revolutionary theory and these have indeed been taken up, but, of course, without an appreciation of the theoretical framework from which they are derived. These two policy proposals have led to a fundamental change to the structure and behaviour of many economies post Keynes's influence on economic policy in the late 1930s and early 1940s. The two policy changes are the increased role of government in management of the aggregate economy and the creation of central banks acting in the public interest. Prior to the *General Theory*, monetary theorists practiced what Schumpeter labelled real analysis –the idea that money is somehow a veil and is therefore neutral in the sense that it has no impact on long-run equilibrium. In real analysis, long-run equilibrium is determined by real forces such as productivity and thrift as was the case with Wicksell's (1898) natural rate, Fisher's (1907) triple equality or Robertson's (1966) loanable funds theory of the rate of interest. By following Knight's advice, the majority of old and new Keynesians have embraced real analysis.

By contrast, in the *General Theory*, Keynes's theoretical revolution consisted of abandoning real analysis, the dichotomy between real and monetary factors, and

integrating the role of monetary factors into the determination of long-run equilibrium. The analytical framework that was to bring about the revolution in the way economists thought about the aggregate economy, Keynes's dubbed the principle of effective demand.<sup>1</sup> The principle of effective demand is the analytical foundation of Keynes's monetary analysis and the basis on which his policy proposals are derived. I will argue that monetary analysis and the principle of effective demand should change the way economists think about monetary economics because they provide the general analytical framework within which much of contemporary analysis is, at best, nested as a special case. At worst, some contemporary monetary theory is an illustration of the work of remorseless logicians, who, starting with a mistake, end in bedlam.<sup>2</sup>

Against this background, to assess the influence of Keynes's revolutionary theory on modern economics the remainder of this paper is structured as follows. Section II provides a brief outline of Keynes's revolutionary monetary analysis to illustrate its level of generality and to explain the existence of long-period unemployment equilibrium and the failure of Say's Law in *laissez faire* monetary economies. Keynes's policy proposals; the 'socialisation of investment' and the abandonment of gold and its replacement by a 'green cheese' factory acting in the public interest (nationalization of the bank of England), then follow directly from his theory. Minsky (1986) describes these changes as introducing a role for 'Big Government' and the

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<sup>1</sup> Keynes has been criticised by Pasinetti (1997) for failing to spell out what he meant by the principle of effective demand. There is some merit to this criticism because when Keynes first introduces the concept in chapter 3 of the *General Theory* he was not in a position yet to stress the important role of the rate of interest in the principle and he employed a simple version of Say's Law. Nevertheless, Keynes (1936, p. 31) clearly flags the importance of the rate of interest for later applications of the principle and later applications of the principle in the *General Theory* make the analysis clear as is demonstrated in particular by Kregel (1976).

<sup>2</sup> Keynes is reputed to have described Hayek's theory of the trade cycle as the work of a remorseless logician who, because he started with a mistake, ended in bedlam.

‘Big Bank’. Section III applies Keynes’s monetary analysis and the principle of effective demand to examine contemporary monetary policy with particular emphasis on inflation targeting. From the perspective of the principle of effective demand, price stability, although necessary in a monetary economy, is not sufficient to ensure macroeconomic stability. The principle of effective demand makes it clear that having created central banks to act in the public interest governments now give them too narrow a mandate to target price stability only. Section IV concludes with a call to reinstate the analytical framework offered by Keynes’s monetary analysis and the principle of effective demand. It will free contemporary monetary science and policy from the rather narrow and distorted focus in which it is currently operating.

## **II      Keynes’s general monetary analysis and the principle of effective demand**

The most important aspect of Keynes’s *General Theory* to recognise is the nature of the generality to which it lays claim. Keynes aims to offer a general analytical framework that can be applied to analyse the aggregate behaviour of any monetary economy, irrespective of its institutional arrangements. Furthermore the analysis is to apply to situations of uncertainty and risk where risk allows the application of the probability calculus but uncertainty requires in addition the application of ‘weight’ to probabilities and the recognition that ‘rules of thumb’ and convention may replace rational calculation in some circumstances. Minsky (1976, pp. 64-67) describes this approach to decision making under uncertainty as Keynes’s dual-decision scheme (not to be confused with Clower’s (1965) concept that uses the same terminology). The economic analysis is aggregate Marshallian in structure and explicitly incorporates the

fallacy of composition as the basis of the distinction between microeconomic and aggregate analysis.

Thus, as Davidson (2007) has recently stressed, Keynes was offering a general analytical apparatus with which to analyse the aggregate behaviour of a monetary economy. By comparison, classical theory is based on a narrower set of assumptions or axioms that preclude elements that Keynes explicitly included.<sup>3</sup> In that sense classical economics is a special case, one that may sometimes nest within Keynes's general analytical framework. This feature itself is the cause of much confusion about Keynes's vision as it involves cases of observational equivalence.

#### *Keynes's monetary analysis and the principle of effective demand*

The key analytical innovation of the *General Theory*, Keynes's principle of effective demand, is itself a generalisation of classical ideas that he had employed in the *Treatise*. The essence of Keynes's insight is the recognition that a *laissez faire* economy can settle into long-run equilibrium before full employment is reached because employers reach a limit to the profitable expansion of output. Once in such equilibrium, entrepreneurs have no incentive to increase aggregate demand and Say's Law fails. The principle of effective demand outlines why this happens. Keynes's building blocks for the principle of effective demand; the propensity to consume, liquidity preference and the marginal efficiency of capital are generalisations of

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<sup>3</sup> Keynes (1936, p. 34) was critical of classical economists for excluding difficult issues. Contemporary classical economists adopt the same strategy when they argue that economic theory can be applied to situations of risk but not uncertainty. Keynes's adopted a contrary attitude and, as Carabelli (1988, p. 219) explained, did not consider uncertainty to be intractable but proposed a theory of action with limited knowledge. So although uncertainty was not reducible to calculable or insurable risk that did not imply that behaviour was irrational. Decision makers followed existing conventions or followed the 'informed opinion' much as fund managers do today when their behaviour is described as 'herding'.



classical concepts and reflect relatively stable behavioural characteristics of households and firms. Consider the relationship between the rate of interest and the marginal efficiency of capital.

Keynes (1936, p. 228) explains, in plain English, the relationship between the rate of interest and the marginal efficiency of capital in the following terms (i.e. describing the point of effective demand):

“Now those assets of which the normal supply-price is less than the demand-price will be newly produced; and these will be those assets of which the marginal efficiency of capital would be greater...than the rate of interest. .... As the stock of assets ... is increased, their marginal efficiency tends to fall. Thus a point is reached at which it no longer pays to produce them, unless the rate of interest falls *pari passu*.”

In Marshallian language, Say’s law fails in a monetary economy because there can exist a limit to the profitable production of capital goods before full employment is reached. Unilateral attempts by entrepreneurs to increase supply will result only in losses unless the point of effective demand is shifted. Increased supply does not automatically increase demand sufficiently to sell the increased output at a normal profit, when the marginal propensity to consume is less than one and the rate of interest does not fall automatically.

In terms of Kregel’s (1976) taxonomy of Keynes’s models, multiple long-period equilibria are possible and we have long-period unemployment equilibrium in the static model.<sup>4</sup> Long-period equilibrium is clearly not unique in the *General Theory* as Keynes (1936, p. 242) makes clear, again in plain English. With only convention to

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<sup>4</sup> The dynamic behaviour of Keynes’s model of shifting equilibrium was best captured by Shackle’s concept of ‘Keynesian Kaleidics’. In a *laissez faire* economy Keynes’s monetary analysis leads to the conclusion that flexibility of the economy is likely to lead to destabilising deflation or inflation rather than an automatic return to full employment as postulated by classical economics, Rogers (1989).

guide them, financial market participants could mistake the norm established by an inappropriate convention for one based on real objective market forces but the point of effective demand may not be consistent with full employment.

Consequently, the *General Theory* is more than another theory of the business cycle; it is primarily a theory that explains persistent sub-optimal performance by a *laissez faire* economy. Keynes saw a fundamental structural flaw in a *laissez faire* economy (on or off the gold standard). A *laissez faire* economy is one in which the private sector's liquidity preference would hold interest rates too high, given the aggregate propensity to consume and the marginal efficiency of capital, the point of effective demand would generally not coincide with full employment. As Keynes's (1936, p.204, emphasis added) explains, when discussing fluctuations in the rate of interest around a *durable level*, the *laissez-faire* economy could fluctuate for decades about a level of activity too low for full employment:

But it [the rate of interest] may fluctuate for decades about a level which is *chronically too high for full employment*; -particularly if it is the prevailing opinion that the rate of interest is self-adjusting, so that the level established by convention is thought to be rooted in objective grounds much stronger than convention, the *failure of employment to attain an optimum level being in no way associated*, in the minds either of the public or of the authority, *with the prevalence of an inappropriate range of rates of interest*.

Keynes (1936, p.204, emphasis added) then went on to make a statement that turned out to be an over optimistic assessment of many of his readers:

“The difficulties in the way of maintaining effective demand at a level high enough to provide full employment, which ensue from the association of a conventional and fairly stable long-term rate of interest, with a fickle and highly unstable marginal efficiency of capital, *should, by now, be obvious to the reader.*”

Thus Keynes employs Marshallian tools to present in plain English the view of an economy that fluctuates, as a consequence of a volatile marginal efficiency of capital, about a level of economic activity too low to sustain full employment because the rate of interest is too high. There is a *structural and a cyclical problem*. Furthermore, contra much of Keynesian economics, no amount of flexibility in the rest of the system could automatically shift the point of effective demand, which determines the level of activity around which the economy fluctuates, to be consistent with full employment even in the long run. Harrod (1947, p. 69, emphasis added) summed this up best what Keynes (1936) had in mind.

*“The theory of interest is, I think, the central point in his scheme. He departs from the old orthodoxy in holding that the failure of the system to move to apposition of full activity is not primarily due to friction, rigidity, immobility or to phenomena essentially connected with the trade cycle. If a certain level of interest is established, which is inconsistent with full activity, no flexibility or mobility in other parts of the system will get the system to move to full activity. But this wrong rate of interest, as we may call it, is not itself a rigidity or inflexibility. It is natural, durable, and, in a certain sense, in a free system, inevitable.”*

The maintenance of high employment was therefore not something that would occur automatically, in a *laissez faire* economy, even in the long run. Its achievement rested on a particular set of circumstances and/or required a structural change to the way governments, the monetary system and central banks behaved. The principle of effective demand is therefore the revolutionary analytical innovation of the monetary analysis presented in the *General Theory* and it provides an analytical framework relevant to any monetary economy, be it historical or contemporary.

Of relevance to the focus of this paper is Keynes’s generalisation of the classical psychological concept of time preference by splitting it into two elements; the

marginal propensity to consume and the state of liquidity preference. It is the latter which plays a key role in determining the rate of interest in a monetary economy and it is this element which is missing from real analysis.

*Liquidity, liquidity preference and liquidity transformation*

The concept of liquidity is fundamental to Keynes's monetary analysis and the concept of liquidity preference in the principle of effective demand. As Wray (2006) has recently stressed, liquidity preference theory is best interpreted as a theory of asset pricing. It is a theory of asset pricing distinct from that of real analysis where fundamentals are often described as Fisherian.<sup>5</sup> In the *General Theory* monetary factors are part of the fundamentals. Keynes (1936, p. 168) also stresses that the existence of uncertainty is a necessary condition for the existence of liquidity preference. The liquidity of an asset as a function of risk and uncertainty is determined by the ability of the owner to convert it into money at any time without significant loss. As all securities are titles to future cash (money) flows, whether coupons, dividends or rents they are subject to the uncertainty and risk attached to the process of liquidity transformation. Individuals need the security of liquidity –the ability to sell securities at short notice without significant loss in organised markets, while producers need continuing and durable finance. Financial markets are an invention that allows for these conflicting needs to be reconciled. Organised markets allow the liquidity needs of individual investors to be reconciled with the durable and lumpy capital needs of specialised production processes and the constraints imposed by time.

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<sup>5</sup> See Lucas (1990) who notes that asset prices often don't seem to reflect Fisher's fundamentals. For Keynes, monetary factors are part of the fundamentals.

Thus all forms of financial intermediation are engaged in reconciling the long-term needs of borrowers with the short-term needs of lenders. This process of liquidity transformation applies to all financial transactions where securities are exchanged for money. Liquidity transformation is an unavoidable characteristic of a monetary economy with financial markets. But, as Keynes (1936, p. 160) pointed out, this arrangement, liquidity transformation in organised markets, although the best of possible options, raises some difficulties. Individual investors need to believe that their investments are liquid but this cannot be true in aggregate so that individual liquidity might vanish in a market panic. The fundamental and unavoidable problem that individual liquidity is not the same thing as aggregate liquidity cannot be avoided by either markets or institutions. This is nothing more than an illustration of the fallacy of composition on which the distinction between microeconomics and macroeconomics ultimately rests. This fallacy, I might add, has disappeared from much of contemporary real analysis based as it is on microeconomic theory.

Banks and financial markets are therefore all unavoidably engaged in liquidity transformation. But, of course, in a situation where loss of confidence strikes, the liquidity of financial markets evaporates under a wave of sell orders. Similarly, a bank engaged in liquidity transformation, faces a liquidity crisis in the case of a bank run, that will result in insolvency unless it has access to a lender of last resort. The banking collapses of the 1930s largely reflected a banking system based on gold. Leading banks, even if they had wanted to do so, were effectively constrained from preventing

the collapse. (See Eichengreen (1992) and Wray (2006, p. 279) for further explanation).

### *Keynes's policy proposals*

Based on his application of the principle of effective demand under uncertainty, Keynes proposed a two-pronged structural change to the *laissez faire* economy. These were the 'socialization of investment' and the replacement of gold by 'green cheese' with the 'green cheese' factory under public control.

The first of Keynes's policy proposals has received some attention in the literature but has generally been interpreted by Keynesians, who cannot 'see' the principle of effective demand, as something equivalent to the use of countercyclical policy to smooth the business cycle. It should be apparent now that Keynes intention was somewhat different. Keynes proposed a greater role for government investment measured as a percentage of GDP so as to reduce uncertainty facing entrepreneurs by stabilising aggregate demand. Kregel (1985) has provided a clear outline of what Keynes had in mind. The intention is to lift entrepreneurs' perceptions of the sustainable marginal efficiency of capital and crowd-in private sector investment. The ultimate objective is to produce a fundamental change in the economy by producing a more benign environment in which the 'animal spirits' of entrepreneurs could prosper *and* be less volatile. In that way both the volatility of the cycle is moderated *and* the average *level* of economic activity made more consistent with full employment.

In today's language Keynes was proposing a structural change to the economy that would shift its growth path closer to that consistent with high or full employment. The

onus is on using government as a *permanent built-in stabiliser* rather than government responding to cyclical downswings via public works and tax cuts. The latter response could be deployed in an emergency but might prove difficult to implement in terms of timing and magnitude and would signify that the built-in stabilising role of government had failed. Paradoxically, one reason for this failure might be the success of the built-in stabilising role of government itself! We will return to this theme below after considering the second element of Keynes's policy proposal – the need for a 'green cheese' factory under public control.

This aspect of Keynes's policy proposals is often overlooked, perhaps because of the cryptic way it is presented in the *General Theory* and perhaps because many early Keynesians neglected Keynes's monetary theory and saw little role for monetary policy relative to fiscal policy. As Tily (2007) points out, this is surprising in view of Keynes's advocacy of what is known as a 'cheap money' policy, i.e. the need to keep the long-term rate of interest low and stable as the contribution of monetary policy to shifting the point of effective demand closer to full employment. Keynes's (1936, p. 235) call for 'green cheese' to replace gold and the 'green cheese' factory to act in the public interest was therefore aimed at shifting the point of effective demand to a level consistent with high employment. Keynes (1936, p. 235) presents the argument as follows:

“Unemployment develops, that is to say, because people want the moon; men cannot be employed when the object of their desire (i.e. money) is something which cannot be produced and the demand for which cannot be choked off. There is no remedy but to persuade the public that green cheese is practically the same thing and to have a green cheese factory (i.e. a central bank) under public control.”

The need for a central bank under public control arises from the need to keep interest rates at a level such that the point of effective demand is consistent with a high level of employment. Keynes argued that under a gold standard in a *laissez faire* economy with a given quantity of gold, the rate of interest would effectively be in the hands of the private sector and inevitably set at a level too high for full employment. Two developments were required to overcome this problem –abandoning gold as a base for the money supply and replacing it with bank money (‘green cheese’). The latter would be in more elastic supply and the rate of interest would be under the control of the central bank in a fashion now familiar under electronic settlement systems. Once the ‘green cheese’ factory is in the business of producing ‘green cheese’ it should always be in a position to impose losses on the retailers of ‘green cheese’, the private banks, and thereby maintain the rate of interest at the desired level.

The proposal to replace gold with ‘green cheese’ and place the ‘green cheese’ factory under public control was implemented by Britain in 1946 and many other countries have followed this model. Prior to this it is far from clear that the Bank of England or the Federal Reserve was aware of the need to act in the public interest or even what that would entail. Thus Keynes’s two-pronged policy proposals sketched in the *General Theory* were intended to bring about a permanent structural change to the *laissez faire* economy and permanently shift the point of effective demand closer to the full employment potential. Minsky (1982, 1986) deserves the credit for drawing our attention to the importance of what he called the ‘Big Government’ and the ‘Big Bank’ in changing the behaviour of the *laissez faire* economy.



Although there is no general counterfactual against which Keynes's policy revolution can be tested I would argue that it is at least one of the explanations for the superior economic performance over the past 70 years. Certainly, technical innovation and advance has proceeded at a pace that was unimagined by Keynes but there is some evidence that government size does impact on macroeconomic performance.<sup>6</sup>

### **III The principle of effective demand and contemporary monetary theory and policy**

It is clear that Keynes's principle of effective demand is absent from contemporary monetary theory and plays no part in guiding contemporary monetary policy. Recall that most Keynesians have retained real analysis and this is evident in the contribution of those new Keynesians to the new consensus model for monetary policy. The core theoretical model of the new consensus employed for policy analysis consists of a Phillips curve, IS-type curve and an interest rate rule. Arestis and Sawyer (2005) provide an excellent survey of the properties of this model. As explained by Palley (2006) and Rogers (2006c) the model reflects classical or real analysis and not Keynes's monetary analysis despite some elements of observational equivalence<sup>7</sup>. The problem with relying on real analysis is that it distorts the way in which economists think about money and monetary policy. Even if it is interpreted as a special case, real analysis has led monetary theorists to overlook important elements of their discipline.

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<sup>6</sup> There is some empirical evidence that economies with a large government sector are more stable than economies with smaller government sectors. See Gali (1994) and Arestis *et. al.* (2004) who show that financial structure exerts significant effects on most economies in their sample.

<sup>7</sup> Those Keynesians who employ monetary analysis had argued, well before the current embrace of interest rate rules by Keynesian real analysis, that the money supply was endogenous and the rate of interest the instrument of monetary policy.

*Contemporary monetary theory; engineers and scientists*

Contemporary monetary theorists in the tradition of real analysis can be divided into two groups, engineers and scientists, along the lines suggested by Mankiw (2006).<sup>8</sup> The engineers are those who deal with policy and the group includes academics, central bankers and regulators who employ a version of the new consensus model referred to above. By contrast, the scientists aim to provide the *theoretical foundations* for the consensus model to be implemented by the engineers. In this respect deregulation of financial markets is often inspired by the monetary scientists who employ the Arrow-Debreu model- interpreted by many as the foundation of monetary science and the basis for the belief in efficient financial markets.<sup>9</sup> I will briefly outline the distortions to clear thinking on monetary theory produced by the use of real analysis on the part of scientists and engineers.

Taking the scientists first, Allen and Carletti (2007, p. 208-9, emphasis added) illustrate an application of the Arrow-Debreu philosophy of efficient markets to the discussion of liquidity:

***‘The essential problem with incomplete markets is that liquidity provision is inefficient.*** The nature of *risk management* to ensure that *the bank or intermediary* has the correct amount of liquidity *changes significantly from the case of complete markets*. When *markets are complete* it is possible to use *Arrow-Debreu securities* or equivalently a full set of derivatives or dynamic trading strategies to ensure liquidity is received when it is needed. *The price system ensures adequate liquidity is provided in every state and is priced properly state by state.* To understand how this works *it is helpful to conceptualise complete markets* in terms of *Arrow securities that are traded at the initial date and pay-off in a particular state.* ***In this case banks and other intermediaries buy liquidity in states where it is scarce by selling liquidity in states where it is not scarce.***

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<sup>8</sup> There may be some overlap with some engineers claiming scientific status. See Claridi, Gali and Gertler (1999).

<sup>9</sup> For example, Wallace (2001) regards the Arrow-Debreu model as the developed part of economics and monetary theory as undeveloped.

In contrast, *when markets are incomplete, liquidity provision is achieved by selling assets in the market when required. Asset prices are determined by the available liquidity or in other words by the ‘cash in the market’.*

This description by Allen and Carletti of the theoretical vision that underpins much of contemporary finance and monetary theory illustrates the nature of the distortions in the way monetary scientists think about a monetary economy. Two examples will suffice to illustrate the point. First, monetary theorists who employ a complete markets Arrow-Debreu model suffer from conceptual dissonance. They confuse properties of the hypothetical Arrow-Debreu model with features of reality that do not exist in the Arrow-Debreu world. Second, as a corollary of the first point, it is not possible to employ the complete markets Arrow-Debreu model to assess the efficiency of liquidity provision by markets, banks and central banks in incomplete markets as there is no basis on which such a comparison can be made. *Contra* Allen and Carletti, reference to the Arrow-Debreu model of complete markets does *not* help us understand the concept of liquidity.

To illustrate the first point, consider the statement by Allen and Carletti that the nature of *risk management by banks or intermediaries* changes between complete and incomplete market models. In a trivial sense this is true. But it is true in a trivial sense because no banks or money exist in the complete markets Arrow-Debreu economy and hence there is no sense in which banks can engage in risk management or buy and sell liquidity in that model! As Hahn (1980) and Lucas (1984, 1990) made abundantly clear, the Arrow-Debreu model has no place for money, liquidity or banks, let alone a

central bank.<sup>10</sup> Conceptualising complete markets in terms of Arrow securities that are traded under an Arrow-Debreu initial date auction as Allen and Carletti suggest is to preclude any need for money, banks or liquidity defined as the conversion of assets into cash at short notice without significant loss.<sup>11</sup> It is a simple semantic mistake to talk about liquidity, defined as the conversion of assets into cash (money), in the context of an Arrow-Debreu complete markets model. As Lucas (1984) makes clear, under an Arrow-Debreu auction all commodities are equally liquid. The statement: “In this case [the complete markets Arrow-Debreu model] banks and other intermediaries buy liquidity in states when it is scarce by selling liquidity in states where it is not scarce” therefore describes a situation under the Arrow-Debreu auction that applies to any commodity. Calling such a commodity, ‘liquidity’ is a semantic sleight of hand.

Yet in the incomplete markets world assets must be traded for cash – money has now appeared and along with it the concept of liquidity as the ability to convert a security into cash without significant loss. Turning to the second point, it appears that economists’ thinking is distorted when they fail to start from a world where inefficiency, incomplete markets or market failure is the norm and any semblance of efficiency is the exception! From any reasonable perspective, money, credit and financial institutions and markets engaged in liquidity transformation are all

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<sup>10</sup> Wallace (2001) attempts to insert a central bank into a cashless Arrow-Debreu model. Needless to say the attempt fails as Wallace acknowledges.

<sup>11</sup> Lucas (1990, 238, fn 2) uses the term liquidity as a synonym for money or cash in a cash-in-advance model and liquidity defined as the ability to convert a security into money at short notice without loss is not defined in his model. He explains as follows: “The term “liquidity” is also used in an entirely different sense, to refer to the “moneyness” that different, non-monetary securities are supposed to possess to vary degrees. In this paper ... .., this second sense of liquidity is entirely absent.” In this paper ‘moneyness’ means the ability to convert a security into money at short notice without loss. Liquid financial markets offer this feature to individuals but to ‘the market’ in aggregate..

efficiency enhancing innovations and inventions that cannot be interpreted from the perspective of the complete markets Arrow-Debreu world where none of these concepts exist. In this context the relevance of the concept of Pareto efficiency collapses. It is not possible to evaluate the efficiency of incomplete market models with money and banks from the perspective of the ‘efficiency’ of the complete markets Arrow-Debreu model.

Consequently, the Allen and Carletti description of the inefficient allocation of liquidity by banks and intermediaries when markets are incomplete is simply misguided. Incomplete markets are the norm but they cannot be reconciled in any sensible way with the Arrow-Debreu methodology because they are inconsistent with the underlying auction without which the Arrow-Debreu model collapses.<sup>12</sup> Arrow-Debreu models with incomplete markets are incoherent – acceptance of incomplete markets requires an alternative theoretical model. And as Allen and Carletti (2007, p. 211) acknowledge, despite the empirical importance of the relationship between liquidity and asset-price bubbles and financial fragility, there is no widely agreed theory of what underlies the relationship. The Arrow-Debreu model can be of no help here, *contra* Allen and Carletti. It is time to return to Keynes’s general vision of monetary analysis.

Failure to recognise these facts has led to much confusion in post war monetary theory that continues to distort thinking in contemporary monetary theory. Well known historical examples are Patinkin’s (1965) attempt to incorporate money into

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<sup>12</sup> Another illustration of the limitations of the methodology is the exclusion of default in models of incomplete markets. As Goodhart (2005) remarks, this rather defeats the purpose of using such models to examine questions of financial stability.

the utility function when it is not required under a Walrasian auction (i.e. money has no identifiable utility different from any other commodity under such an auction) and Clower's (1967) attempt to impose a cash-in-advance constraint under the same auction. The latter simply converts money from an invention that overcomes the frictions of barter into an unnecessary constraint that reduces welfare in the model; *contra* common sense and two hundred years of conventional wisdom. To his credit Clower (1984) recognised the problem but the same cannot be said for many contemporary monetary theorists who continue to repeat these conceptual errors.<sup>13</sup>

In this respect, the complete markets Arrow-Debreu vision still has a strong influence in Woodford's *Interest and Prices* which he describes as a neo-Wicksellian foundation for a theory of monetary policy. Although much of this work is intended to lay the foundations for the new consensus model of monetary policy it contains the same fundamental conceptual errors sketched above as it attempts to meld the ideas of Wicksell with those of Fisher and Walras. For example, Woodford continually refers to monetary frictions caused by the cash-in-advance constraint without Clower's recognition that this is contrary to common sense and 200 years of conventional wisdom. More startling is Woodford's claim that his frictionless complete markets model, where money does not exist, can provide the foundation for a theory of monetary policy or that it is possible to calibrate 'monetary frictions'! Rogers (2006a, 2007a, 2007b) outlines the conceptual contortions generated by such models and argues that the conceptual dissonance produced by these models invalidates their

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<sup>13</sup> Lucas (1990) adds a cash-in-advance constraint to an otherwise Walrasian model in an attempt to explain why asset prices often fail to reflect what he regards as Fisherian fundamentals. As noted below, this model is incoherent –it converts money into a friction. Earlier, Lucas (1984) sought to restrict the use of such models to the generation of predictions that were empirically testable in some way.

usefulness as a foundation for monetary theory and policy. Essentially most of the issues of interest to monetary theorists are precluded by construction in this extreme form of real analysis. Interestingly, Keynes (1936, p. 192) was well aware of the form of abstract thinking exhibited by contemporary monetary scientists as the following quote about Ricardo makes clear:

“Ricardo offers us the supreme intellectual achievement, unattainable by weaker spirits, of adopting a hypothetical world remote from experience as though it were the world of experience and then living in it consistently. With most of his successors common sense cannot help breaking in –with injury to their logical consistency.”

Lucas aspires to Ricardo’s standard but many others are less single minded.

In that respect, it is becoming increasingly apparent that real analysis is also producing distortions to the way monetary engineers think about the way in which monetary policy influences the real economy. The belief in the neutrality of money in particular has led to a distortion in perceptions about the function and scope of monetary policy and this belief has been reinforced by the monetary scientists’ belief that the Arrow-Debreu model is the core of economic science that provides the ‘model’ for deregulation of efficient financial markets.

#### *Contemporary monetary policy- inflation targeting and financial market deregulation*

A convenient way in which to illustrate this assessment of the current state of monetary theory and policy is to consider the current focus on inflation targeting. Several, including Palley (2002), from the perspective of monetary analysis, and White (2006), from a regulators perspective, have recently questioned the exclusive focus of monetary policy on inflation targeting. This question has been posed, not because of the failure of inflation targeting *per se*, but because of the frequency of

asset-price booms and busts that have occurred over the past two decades during which inflation targeting is credited with keeping consumer-price inflation low.

As noted above, inflation targeting is based on monetary theory in the tradition of real analysis and rests on the belief that there exists a unique (not necessarily constant)<sup>14</sup>, aggregate, long-run equilibrium consistent with full employment. This equilibrium is determined by real factors, independently of monetary factors, that is, some form of the classical dichotomy holds<sup>15</sup>. Hence, money is treated as neutral in the long run and this has led to the belief on the part of monetary engineers that central banks should only target inflation as that is the only variable they can influence in the long run. The principle of effective demand reveals that this belief is misguided. Targeting inflation is necessary but not sufficient to ensure macroeconomic stability. Keynes's policy proposals may keep the economy close to its full employment path but that is not a confirmation of long run monetary neutrality and it is not sufficient to achieve financial market stability. This conclusion is supported by current developments in financial markets.

The current process of evolution and deregulation in financial markets is described variously as the 'marketization of finance' by Borio (2007) or as 'financialization' by Palley (2007) and others. To be useful, Keynes's general analytical framework must apply to these contemporary developments and it must apply also to situations where events with an apparently tiny probability of occurrence, so-called tail events, do in

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<sup>14</sup> Kirman (1989) explains that there is no theoretical basis for belief in unique aggregate equilibrium in Walrasian general equilibrium systems. Aggregate excess demand functions are not monotonic.

<sup>15</sup> Dougherty (1980) explains what he calls the 'loose form of the classical dichotomy' as the reconciliation of the Keynesian short run with the Fisherian long run.



fact occur and have apparently disproportionately large real effects on the economy. I have in mind here so-called 9 standard deviation events or events with 1:10 000 year chance of occurring that seem to occur with a frequency of at least once a decade. These issues raise fundamental questions about monetary and financial theory that reflect the difference between real and monetary analysis and the distinction between risk and uncertainty. On the latter score it is important to remember that Keynes (1936, p. 240) employs the concept of ‘weight’ to explain the confidence that attaches to probabilities. The latter is important when examining the liquidity of assets and provides Keynes with a more general perspective than that in contemporary use.<sup>16</sup> In particular, any useful analytical framework requires a clear understanding of the properties of a monetary economy and the concept of *liquidity, liquidity transformation, the role of markets and institutions in that process* together with the role of the central bank in managing the monetary and financial system in the public interest. Keynes provided such a framework that remains useful for interpreting contemporary events in financial markets.

To begin with, it is often overlooked by monetary theorists that responsibility for financial stability was explicitly written into the constitution of the Bank of England. The Bank of England was entrusted not only with the maintenance of price stability, but was also instructed *to ensure the stability of the financial system*. The Bank of England Financial Stability Report (2007, p1.) explicitly states that the Bank has *two core purposes*; monetary stability and financial stability. (The responsibility for a

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<sup>16</sup> Goodhart et. al (2006) are exploring ways to model the process of financial fragility under the process of liquidity transformation outside of orthodox approaches, as do those who employ search theory. However, the latter, in its quest for a unified approach falls into inconsistency when attached to a Walrasian or Arrow-Debreu auction. See Rogers ( 2007a)

contribution to the maintenance of full employment now receives less attention) However, today, under the Bank of England Act of 1998, the responsibility for financial stability has been partially contracted-out by the government to the Treasury and the Financial Services Authority (FSA). A similar model has been adopted in many other countries that have implemented inflation targeting in deregulated or unregulated financial markets. From the perspective of the principle of effective demand this raises some questions.

First, if governments have entrusted the ‘green cheese’ factory with monopoly power to be exercised in the public interest how does that relate to the push for competition and deregulation of the rest of the financial sector? At the very least, second best is of consideration here. Consequently there is no *prima facie* case in economic theory for increased competition in financial markets. If the ‘green cheese’ factory is to be regulated in the public interest the same logic should apply to retailers of ‘green cheese’ –particularly if they have the capacity to induce the central bank to create ‘green cheese’. All forms of liquidity transformation require some form of regulation to ensure that financial fragility does not upset macroeconomic stability. Second, if the power of the ‘green cheese’ factory is to be exercised effectively it must be recognised that the central bank, the producer of ‘green cheese’, must have responsibility and control over *all* the retailers of ‘green cheese’. Although ‘green cheese’ is endogenously created in such banking systems<sup>17</sup>, neither the Treasury nor the prudential regulator has the capacity to supply ‘green cheese’ in the event of a systemic liquidity crisis – an aggregate shortage of ‘green cheese’. Responsibility for the stability of the financial system that requires the provision of aggregate net

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<sup>17</sup> Palley (2002) explains why money, ‘green cheese’, is logically endogenous in such systems .

liquidity should therefore not be divided between institutions some of which cannot provide that liquidity. The recent confusion between the Treasury, FSA and Bank of England over Northern Rock that generated a run on that institution makes the point. The central bank is responsible for financial stability and should be given the tools to do the job. Markets can provide individual liquidity when there is a balance between bulls and bears but they cannot provide aggregate or net liquidity in the face of systemic loss of confidence and this is what is required in a financial crises.

Consider, for example, the process of securitization seen from Keynes's perspective. Securitization is often presented as a means of dispersing risk to those who can best accommodate it; an efficient allocation of risk. But it is often overlooked that aggregate or systemic risk cannot be reduced by securitization it can only be redistributed between financial institutions. Systemic risk cannot be diversified away and if some is shifted to markets or institutions that lie beyond the sphere of influence of the 'green cheese' producer then systemic risk may in fact have increased. In an uncertain world with incomplete markets Keynes distinction between individual and aggregate liquidity is relevant, all institutions and markets are engaged in liquidity transformation and liquidity preference can have a dramatic impact on aggregate liquidity. Markets cannot act to increase aggregate liquidity –only the 'green cheese' factory can do that. These concepts are, it seems, now recognised by regulators responsible for stability of financial markets.

Economists like Borio (2007) writing in the field of financial market regulation confront many of the problems raised by liquidity transformation and would be at

home with Keynes's monetary analysis. For example, when Borio (2007, p.17) notes that financial markets can suffer a run in the same way as banks and market liquidity can simply evaporate, he is restating Keynes's observation that market or aggregate net liquidity is a mirage; it vanishes when you most need it. As all financial institutions *and markets* are engaged in liquidity transformation – it is an inescapable feature of a market economy- when everyone attempts to sell or withdraw deposits the market or the bank is in trouble. Thus markets, like banks are only liquid when *individuals* make sales or withdraw deposits and there is a balance of opinion between bulls and bears. This fragility is an inevitable consequence of liquidity transformation that is in turn an unavoidable characteristic of financing production through organised securities markets as Keynes explained. Why it comes as such a surprise to contemporary monetary theorists is itself surprising. Minsky (1975, 1986), in particular, has been prominent in explaining why financial markets and institutions designed to enable liquidity transformation are prone to endogenous instability. Contemporary evaluations, such as that by Rajan (2006), confirm that the evolving financial markets have perverse incentives for traders that aggravate pro-cyclical and potentially destabilising behaviour. See also Kregel (2007) and Wray (2007b). Failure to pay attention to the consequences of deregulation on the fragility of the financial sector has also led central banks into additional difficulties.

The appearance of asset-price booms and busts over the past two decades is the manifestation of this pro-cyclical behaviour and has led to the growing realisation, even among exponents of real analysis, that inflation targeting is not enough and that perhaps central banks should both include asset-prices in the inflation target,

Goodhart (2001), and/or act to burst asset-price bubbles. Central banks have generally heeded the arguments against either of these suggestions. But from the perspective of monetary analysis and the principle of effective demand these questions were badly posed. The question is not how the central bank should respond to these events but how they should be prevented in the first place. The current practice of not responding to asset-price bubbles on technical grounds is not sustainable because they do have permanent real effects that impinge on perceptions of fairness and equity in a democratic society. Both Goodhart (2005) and Palley (2002, 2006) have therefore proposed that central banks need to take back their control over stability of the financial sector and be given an additional instrument, in Tinbergen fashion, to achieve the additional target or object of financial market stability.<sup>18</sup>

The contemporary policy of inflation targeting and deregulation of financial markets, based as it is on varieties of real analysis, thus leaves both governments and central banks exposed to an incomplete diagnosis and to prescribing the wrong medicine. The fact that financial stability has been neglected is reflected by the emergence of asset-price inflation which has forced a reaction by central banks to clean up the mess when these asset-price bubbles burst. That has led to two additional problems.

First, by implementing policy on the basis of real analysis, looking only at consumer-price inflation, central banks have been drawn into actions that are potentially destabilising themselves and increase moral hazard. As Palley (2006) explains very

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<sup>18</sup> Palley (2006) also endorses a form of inflation targeting but argues that it is not enough to maintain macroeconomic stability and some form of counter cyclical reserve ratios are required. To be successful these proposals would have to apply to all financial institutions and markets and face the fact that they increase the incentives for disintermediation through the creation of 'new' financial instruments and institutions not subject to existing regulations.

well, the neglect of financial market stability has resulted in several asset-price booms and busts that central banks have taken no action to head off. But the 'hands off' attitude is immediately abandoned when central banks act to prevent negative real effects once a bubble has burst. This asymmetrical policy response then acts as an implicit guarantee and over time changes the perception of risk and uncertainty in financial markets – players begin to factor in the bailout and their appetite for risk increases, only encouraging the creation of what Rajan (2006) calls false alpha, and along with it the probability and possibility of future crises.

Although action by central banks to head-off the negative real effects of asset-price busts is justified on the grounds that it will have negative effects on the real economy real analysis suggest that these should wash-out in the long run. But politicians do not have the faith to put this theory to the test. Also, it is never explained by exponents of real analysis how these negative short-run effects would be reversed in the long run. Clearly there will be lasting real effects to the composition, distribution and level of the capital stock. Furthermore, it is often suggested that central banks cannot identify bubbles- situations where asset-prices differ significantly from fundamentals- so they should not take action to interfere with individual investment decisions. There is some theoretical basis for this view as it is recognised in the tradition of real analysis that asset-prices often do not correspond to Fisherian fundamentals (Recall Lucas (1990)). From the perspective of monetary analysis this is hardly surprising and is not a valid argument in favour of inaction. There are few asset-price bubbles where it has not been possible for an objective observer to conclude that a bubble was in play. A central bank is just such an independent observer that can be delegated to take action.

Monetary analysis suggests that the sensible course of action is to prevent asset-price booms and busts from arising in the first place.

A related difficulty concerns the movements in interest rates that have been induced by the bursting of asset-price bubbles. As many have noted, volatility in interest rates leads to volatility in asset prices and feeds the speculative behaviour of some financial market participants of which Hedge Funds are the most visible. Wray (2007b) argues that the increasing volatility in interest rates is ultimately counter-productive as it stimulates speculation and destabilises financial markets inducing a further response from the central bank. Thus, by following the prescriptions of real analysis central banks are unintentionally contributing to instability and volatility in financial markets. Volatility in financial markets generated by speculation serves no useful social purpose, has nothing to do with allocative efficiency and serves only to undermine confidence in the central bank as the guardian of financial stability.

#### **IV Concluding remarks**

The general conclusion that follows from the discussion presented above is that Keynes has an unacknowledged legacy in the form of a policy induced structural change to the *laissez faire* economy in the form of ‘Big Government’ and the ‘green cheese’ factory acting in the public interest. The Keynesians are employing a loose form of the classical dichotomy based on the uniqueness of long-run equilibrium and money neutrality and that vision supports the concentration on inflation targeting as the sole objective of monetary policy. More extreme proponents of the neutral money doctrine (effectively a money irrelevance doctrine) apply the Arrow-Debreu

methodology for asset-pricing theory and the basis for a theory of efficient financial markets. Those models provide the tacit basis for belief in deregulation of efficient financial markets that has led directly to the series of asset-price booms and busts that have raised the concern of central bankers.

The principle of effective demand in Keynes's monetary analysis reveals the narrow and tacit special assumptions that support the belief in neutral money and efficient financial markets. Of particular current concern is the role that real analysis plays in deflecting attention away from the central banks' role in maintaining financial stability. The central bank, as the monopoly supplier of 'green cheese' is the only institution that can provide the necessary 'green cheese' in a crisis. Consequently, if it is to avoid being drawn into creating moral hazard and facilitating fragility in financial markets it must have some responsibility and therefore some instrument(s) for maintaining financial market stability. There is growing recognition that monetary policy must again be extended in that direction. The process will be better understood and the right medicine delivered if the perspective of Keynes's monetary analysis is adopted. There is nothing to lose by taking this step as it requires a *general monetary analysis* perspective that will remove many of the distortions in economists' thinking induced by the use of *real analysis*.



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